IS 10091 (1981): Iron oxide powder for use in foundries
[MTD 14: Foundry]

BLANK PAGE

IS : 10091 - 1981
(Reaffirmed 2003)

Indian Standard

SPECIFICATION FOR IRON OXIDE POWDER FOR USE IN FOUNDRIES

UDC 661·872·2 : 621·74

INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

April 1982

Indian Standard

SPECIFICATION FOR IRON OXIDE POWDER FOR USE IN FOUNDRIES

Foundry Sectional Committee, SMDC 17

Chairman	*Representing*
DR S. S. KHANNA	National Institute of Foundry & Forge Technology, Ranchi
Members	
SHRI A. K. AWASTHI	Steel Authority of India Ltd (Bokaro Steel Plant), Bokaro
SHRI K. A. GANDHI	HMT Ltd, Bangalore
SHRI SANJIT SEN (*Alternate*)	
SHRI M. K. GOSWAMI	Indian Non-ferrous Metals Manufacturers' Association, Calcutta
SHRI D. P. JAIN (*Alternate*)	
SHRI R. K. GUGNEJA	DCM Engineering Products (Delhi Cloth and General Mills), New Delhi
DR V. P. GUPTA (*Alternate*)	
SHRI P. L. JAIN	National Institute of Foundry & Forge Technology, Ranchi
SHRI K. KISHORE (*Alternate*)	
SHRI R. K. KEJRIWAL	Federation of Engineering Industries of India, New Delhi
SHRI V. N. UPADHAYA (*Alternate*)	
SHRI R. C. KOTHARI	Poineer Equipment Co Pvt Ltd, Vadodara
SHRI C. BHASKARAN (*Alternate*)	
SHRI K. S. LAL	The Indian Iron & Steel Co Ltd, Calcutta
SHRI R. N. MUKHERJEE (*Alternate*)	
SHRI K. N. MEHRA	Heavy Engineering Corporation Ltd, Foundry Forge Plant, Ranchi
SHRI A. K. BANERJEE (*Alternate*)	
SHRI T. R. MOHAN RAO	Directorate General of Technical Development, New Delhi
SHRI U. SEN (*Alternate*)	
SHRI V. N. PANDIT	M. M. Suri & Associates (P) Ltd, New Delhi
SHRI M. K. PRAMANIK	Iron & Steel Control (Ministry of Steel & Mines), Calcutta

(*Continued on page* 2)

(*Continued from page* 1)

Members	*Representing*
SHRI G. N. RAO	National Metallurgical Laboratory (CSIR), Jamshedpur
SHRI P. P. RASTOGI	Steel Authority of India Ltd (Rourkela Steel Plant), Rourkela
SHRI D. SINGH (*Alternate*)	
SHRI R. N. SAHA	Directorate General of Supplies and Disposals (Inspection Wing), New Delhi
SHRI DARBARA SINGH (*Alternate*)	
SHRI B. L. SEN	Indian Oxygen Ltd, Calcutta
SENIOR CHEMIST & METALLURGIST, CLW, CHITTARANJAN	Ministry of Railways
CHEMIST & METALLURGIST, CLW, CHITTARANJAN (*Alternate* I)	
CHEMIST & METALLURGIST, NF RLY, NEW BONGAIGAON (*Alternate* II)	
SHRI V. P. SHENOY	Tata Engineering & Locomotive Co Ltd, Jamshedpur
SHRI A. BHATTACHARJEE (*Alternate*)	
SHRI V. N. SUNDERAJAN	M. N. Dastur & Co Pvt Ltd, Calcutta
SHRI S. THIYAGARAJAN	Southern Alloy Foundries Pvt Ltd, Madras
SHRI T. S. VENKOBA RAO	Ennore Foundries Ltd, Madras
SHRI K. V. KRISHNAN (*Alternate*)	
SHRI C. R. RAMA RAO, Director (Struc & Met)	Director General, ISI (*Ex-officio Member*)

Secretary

SHRI S. K. GUPTA
Assistant Director (Met), ISI

Foundry Auxiliary Material Subcommittee, SMDC 17 : 5

Convener	
DR V. P. GUPTA	DCM Engineering Products, Ropar
Members	
SHRI P. D. BAJORIA	J. D. Jones & Co Ltd, Calcutta
SHRI H. N. SEN (*Alternate*)	
SHRI A. BHATTACHARJEE	Tata Engineering & Locomotive Co Ltd, Jamshedpur
SHRI V. MANNINGE (*Alteenate*)	
SHRI K. A. GANDHI	HMT, Bangalore
SHRI SANJIT SEN (*Alternate*)	
SHRI P. M. GOKHALE	Premier Automobiles Ltd, Bombay
SHRI K. KISHORE	National Institute of Foundry & Forge Technology Ranchi
DR K. S. S. MURTHY	Indian Institute of Science, Bangalore
SHRI T. RANGANATHAN	Indian Vegitable Products Ltd, Bombay
SHRI M. T. JETLY (*Alternate*)	
SHRI S. C. RASTOGI	Heavy Engineering Corporation Ltd, Ranchi
SHRI M. MOHAN (*Alternate*)	
SHRI D. SITARAMIAH	Greaves Foseco Ltd, Pune
SHRI S. SEETHARAMAN (*Alternate*)	
SHRI T. S. VENKOBA RAO	Ennore Foundries Ltd, Madras
SHRI K. CHINNATHAMBI (*Alternate*)	

Indian Standard

SPECIFICATION FOR IRON OXIDE POWDER FOR USE IN FOUNDRIES

0. FOREWORD

0.1 This Indian Standard was adopted by the Indian Standards Institution on 30 December 1981, after the draft finalized by the Foundry Sectional Committee had been approved by the Structural and Metals Division Council.

0.2 Iron oxide powder is manufactured by pulverizing Soft Hematite Ores (fully weathered) and is used as an additive for both core and moulding sand mixture to achieve high temperature plasticity, hot strength and anti-metal penetration characteristics. In core sand, addition of iron oxide prevents veining/high temperature cracking of cores.

0.2.1 In steel foundry, iron oxide is used both for core and moulding sand, but in iron foundry the use is restricted to core making only.

0.2.2 Limited applications of iron oxide are also there in refractory wash to suppress nitrogen pin-holing defect.

0.3 This standard has been prepared on the basis of the use of iron oxide with a high percentage of iron. This standard is likely to be revised in future for incorporating the usage of lower purity iron oxide (Fe_2O_3) powder, when sufficient data on its usage, based on practical experience is available.

0.4 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, experessing the result of a test or analysis, shall be rounded off in accordance with IS : 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

---

*Rules for rounding off numerical values (*revised*).

1. SCOPE

1.1 This standard covers the requirements for iron oxide powder for use in foundries.

2. SUPPLY OF MATERIAL

2.1 General requirements relating to supply of iron oxide powder shall be as specified in IS : 1387-1967*.

3. REQUIREMENTS

3.1 Colour — Colour of the material shall be redish brown.

3.2 Fineness — 98 percent of the material shall pass through 106 μm IS Sieve (corosponding to 140 ASTM and 150 Mesh BS sieve) [*see* IS : 460 (Part I)-1978]†.

3.3 Chemical Composition — The iron content shall be not less than 65·0 percent and iron oxide (Fe_2O_3) content shall be not less than 93 percent.

3.4 *p*H Value — *p*H value of 10 percent solution in distilled water shall be 9·0 *Max.*

4. TESTING PROCEDURE

4.1 Chemical analysis for iron content of iron oxide powder shall be done in accordance with the method given in IS : 1493 (Part I)-1981‡.

5. SAMPLING

5.1 Representative samples drawn and the criteria for conformity for various requirements shall be as given in Appendix A.

6. PACKING

6.1 Unless specified otherwise, iron oxide powder shall be supplied in polythene lined gunny bags each containing 50 kg.

7. MARKING

7.1 The bags containing iron oxide powder shall be clearly marked with the supplier's name or trade mark.

---

*General requirements for the supply of metallurgical materials (*first revision*).
†Specification for test sieves: Part I Wire cloth test sieve (*second revision*).
‡Methods of chemical analysis of iron ores: Part I Determination of common constituents (*first revision*).

7.1.1 The material may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made thereunder. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

APPENDIX A

(*Clause* 5.1)

SAMPLING OF IRON OXIDE POWDER IN BAGS

A-1. LOT

A-1.1 In any consignment, all the bags of material manufactured under similar conditions shall be grouped together to constitute a lot.

A-1.1.1 Samples shall be taken and tested from each lot for ascertaining the conformity of the lot.

A-2. SCALE OF SAMPLING

A-2.1 The number of bags to be selected from each lot, shall be according to Table 1.

TABLE 1 SCALE OF SAMPLING

LOT SIZE (NUMEER OF BAGS IN A LOT)	SAMPLE SIZE (NUMBER OF BAGS TO BE SELECTED)
(1)	(2)
UP to 50	5
51 to 150	8
151 to 300	13
301 and above	20

A-2.1.1 The bags shall be selected at random. In order to take the bags at random, the provisions given in IS : 4905-1968* may be followed.

*Methods for random sampling.

A-3. PREPARATION OF TEST SAMPLES

A-3.1 From each of bags selected according to Table 1, with the help of a suitable sampling instrument, adequate quantity of material shall be taken. This material shall be taken from different parts of the bag. Material taken from different bags shall be mixed to from a composite sample representing the lot. The composite sample thus obtained shall be divided into three equal parts and kept in an air tight container. One sample is for the supplier, one for the buyer and the third shall be kept as a reference sample.

A-4. NUMBER OF TESTS AND CRITERIA FOR CONFORMITY

A-4.1 Tests for colour, fineness, chemical composition and *p*H value shall be conducted on the sample obtained as per **A-3.1.**

A-4.2 The lot shall be declared as conforming to the specification, when the sample tested for different characteristics (*see* **A-4.1**) conform to relevant requirements of the specification.